

WHAT IS CLAIMED:

1. A method for amplifying nucleic acid, comprising:
introducing a nucleic acid molecule into a plant cell, wherein the
nucleic acid molecule includes a sequence of nucleotides that targets the
5 nucleic acid molecule to an amplifiable region of a chromosome in the
plant cell;
growing the plant cell; and
identifying from among the resulting plant cells those that include a
chromosome with a portion that has undergone amplification.
- 10 2. The method of claim 1, wherein the targeting sequence of
nucleotide is selected from among those that target the molecule to the
pericentric heterochromatic region of a chromosome.
3. The method of claim 1, wherein the targeting sequence
comprises rDNA.
- 15 4. The method of claim 1, wherein the targeting sequence
comprises an origin of replication or an amplification promoting sequence
(APS).
5. The method of claim 1, wherein the plant is tobacco, rice,
maize, rye, soybean, wheat, Brassica napus, cotton, lettuce, potato,
20 tomato, petunia or arabidopsis.
6. The method of claim 1, wherein the amplified nucleic region
includes amplified endogenous chromosomal nucleic acid.
7. The method of claim 1, wherein the nucleic acid molecule
encodes one or more genes.
- 25 8. The method of claim 1, wherein the nucleic acid molecules
encodes products that confer disease resistance to a plant.
9. A method for amplifying a nucleic acid, comprising:
introducing a nucleic acid fragment comprising sequences of
nucleotides targeted to an amplifiable region of a chromosome into a plant
30 cell under conditions whereby the fragment integrates into the
chromosome.

10. The method of claim 9, further comprising replicating the plant cell.

11. The method of claim 9, wherein the targeting sequences of nucleotides are selected from among those that target the molecule to the
5 pericentric heterochromatic region of a chromosome.

12. The method of claim 9, wherein the targeting sequences comprise rDNA.

13. The method of claim 9, wherein the targeting sequences comprise an origin of replication or an amplification promoting sequence
10 (APS).

14. The method of claim 9, wherein the plant is tobacco, rice, maize, rye, soybean, wheat, Brassica napus, cotton, lettuce, potato, tomato, petunia or arabidopsis.

15. A method for amplifying a nucleic acid, comprising:
15 introducing a nucleic acid fragment that comprises rDNA into a plant cell under conditions that produce plant cells that have incorporated the DNA fragment or a portion thereof that comprises the rDNA into a chromosome of the plant cell, whereby the nucleic acid fragment is amplified.

20 16. The method of claim 15, further comprising replicating the plant cell.

17. The method of claim 15, wherein the plant is tobacco, rice, maize, rye, soybean, wheat, Brassica napus, cotton, lettuce, potato, tomato, petunia or arabidopsis.